APPENDIX B
IMPACT ASSESSMENT METHODS

B.1 INTRODUCTION

This appendix briefly describes the methods used to assess the potential direct, indirect, and cumulative effects of the treatment and management of sodium-bonded spent nuclear fuel. Included are impact assessment methods for air quality; water resources; socioeconomics; waste management; and cumulative impacts. Each section is organized so that the affected resource is described first, and then the impact assessment method is presented. Methodologies were not developed for land resources; site infrastructure; noise; geology and soils; ecological resources; and cultural and paleontological resources, since impacts to these resources either would not occur or would be very small. This is because new construction would not be required, airborne and aqueous effluents would be controlled and permitted, and infrastructure requirements would not change for any of the treatment and management alternatives. Descriptions of the methods for the evaluation of human health effects from normal operations; facility accidents; transportation; and environmental justice are presented in Appendices E, F, G, and H, respectively.

Impact analysis varied with the resource area. For air quality, for example, estimated pollutant concentrations from the proposed facilities were compared with the appropriate regulatory standards or guidelines. Comparison with regulatory standards is a commonly used method for benchmarking environmental impacts and was done here to provide perspective on the magnitude of the identified impacts. The analysis of waste management impacts compared waste generated by the management of sodium-bonded spent nuclear fuel to the capacities of waste management facilities. Impacts in all resource areas were analyzed consistently; that is, the impact values were estimated using a consistent set of input variables. Also, similar presentations were developed to facilitate the comparison of alternatives.

B.2 AIR QUALITY

B.2.1 Description of Affected Resources

Air pollution refers to any substance in the air that could harm human or animal populations, vegetation, or structures, or that unreasonably interferes with the comfortable enjoyment of life and property. For purposes of this environmental impact statement (EIS), only outdoor air pollutants were addressed. They may be in the form of solid particles, liquid droplets, gases, or a combination of these forms. Generally, they can be categorized as primary pollutants (those emitted directly from identifiable sources) and secondary pollutants (those produced in the air by interaction between two or more primary pollutants, or by reaction with normal atmospheric constituents that may be influenced by sunlight). Air pollutants are transported, dispersed, or concentrated by meteorological and topographical conditions. Thus, air pollutant emission characteristics, meteorology, and topography affect air quality.

Ambient air quality in a given location can be described by comparing the concentrations of various pollutants in the atmosphere with the appropriate standards. Ambient air quality standards have been established by Federal and state agencies, allowing an adequate margin of safety for protection of public health and welfare from the adverse effects of pollutants in the ambient air. Pollutant concentrations higher than the corresponding standards are considered unhealthy; those below such standards are considered acceptable.

The pollutants of concern are primarily those for which Federal and state ambient air quality standards have been established, including criteria air pollutants, hazardous air pollutants, and other toxic air compounds. Criteria air pollutants are those listed in 40 CFR 50. Hazardous air pollutants and other toxic compounds are those listed in Title I of the 1990 Clean Air Act, as amended; those regulated by the National Emissions Standards for Hazardous Air Pollutants; and those that have been proposed or adopted for regulation by the respective state or are listed in state guidelines. Also of concern are air pollutant emissions that may contribute to the depletion of stratospheric ozone or global warming.

Areas with air quality better than the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants are designated as being in attainment, while areas with air quality worse than the NAAQS for such pollutants are designated as being in nonattainment. Areas may be designated as unclassified when sufficient data for attainment status designation are lacking. Attainment status designations are assigned by county, metropolitan statistical area, consolidated metropolitan statistical area, or portions thereof. Air Quality Control Regions designated by the U.S. Environmental Protection Agency (EPA) are listed in 40 CFR 81.

For locations that are in an attainment area for criteria air pollutants, prevention of significant deterioration regulations limit pollutant emissions from new sources and establish allowable increments of pollutant concentrations. Three prevention of significant deterioration classifications are specified with the criteria established in the Clean Air Act amendments. Class I areas include national wilderness areas; memorial parks larger than 2,020 hectares (5,000 acres); national parks larger than 2,430 hectares (6,000 acres); and areas that have been redesignated as Class I. Class II areas are all areas not designated as Class I. No Class III areas have been designated. Idaho National Engineering and Environmental Laboratory (INEEL) and the Savannah River Site (SRS) are within attainment areas (Class II) for the criteria air pollutants. INEEL is located about 50 kilometers (33 miles) from the Craters of the Moon National Monument Class I area. There are no Class I areas within 100 kilometers (62 miles) of SRS.

Baseline air quality is typically described in terms of pollutant concentrations modeled for existing sources at each site and background air pollutant concentrations measured near the sites. For this analysis, concentrations for existing sources were obtained from the sites (Moor and Peterson 1999) and from the *Savannah River Site Spent Nuclear Fuel Management Draft Environmental Impact Statement* (DOE 1998). These concentrations were compared with Federal and state regulations or limits (**Table B–1**). To determine human health risk, modeled chemical concentrations in air were weighed against chemical-specific toxicity values.

B.2.2 Description of Impact Assessment

Potential air quality impacts of pollutant emissions were evaluated for each alternative. This assessment included a comparison of emissions from each alternative with applicable Federal and state ambient air quality standards. If both Federal and state standards exist for a given pollutant and averaging period, compliance was evaluated using the more stringent standard.

Table B–1 Impact Assessment Protocol for Air Quality

Resources	*Required Data*		*Measure of Impact*
	Affected Environment	*Alternative*	
Criteria air pollutants and other regulated pollutants[a]	Modeled ambient concentrations (micrograms per cubic meter) of air pollutants from existing sources at site	Emission rate (kilograms per year) of air pollutants from facility and concentrations of air pollutants	Contribution of proposed alternative and total concentration of each pollutant at or beyond site boundary compared to applicable standard
Toxic/hazardous air pollutants[b]		Emission rate (kilograms per year) of toxic air pollutants from facility (micrograms per cubic meter)	

[a] Carbon monoxide; hydrogen fluoride; lead; nitrogen oxides; ozone; particulate matter with an aerodynamic diameter less than or equal to 10 microns; particulate matter with an aerodynamic diameter less than 2.5 microns; sulfur dioxide; total suspended particulates.

[b] Clean Air Act Title III pollutants, pollutants regulated under the National Emission Standards for Hazardous Air Pollutants, and other state-regulated pollutants.

Air pollutant emissions and concentrations data for each alternative, including the No Action Alternative, were based on information obtained in response to data requests to INEEL (ANL 1999, Moor and Peterson 1999) and on the *Savannah River Site Spent Nuclear Fuel Management Draft Environmental Impact Statement* (DOE 1998). INEEL emissions and corresponding concentrations were not quantified, but are expected to be well below regulatory concern. For SRS, concentrations were obtained by scaling the SRS Spent Nuclear Fuel Draft EIS concentrations based on the mass of blanket fuel to be processed under each alternative.

Ozone is typically formed as a secondary pollutant in the ambient air (troposphere). It is formed from primary pollutants such as nitrogen oxides and volatile organic compounds, which emanate from vehicular (mobile), natural, and other stationary sources, mixing in the presence of sunlight. Ozone is not emitted directly as a pollutant from the sites. Although ozone may be regarded as a regional issue, specific ozone precursors, notably nitrogen dioxide and volatile organic compounds, were analyzed as applicable to the alternatives under consideration.

Emissions of potential stratospheric ozone-depleting compounds such as chlorofluorocarbons were not evaluated, as no emissions of these pollutants were identified.

B.3 WATER RESOURCES

B.3.1 Description of Affected Resources

Water resources are the surface and subsurface waters that are suitable for human consumption; agricultural purposes; irrigation; or industrial/commercial purposes, and that could be impacted by the treatment of sodium-bonded spent nuclear fuel. This analysis involves the review of engineering estimates of expected water use and effluent discharges associated with the alternatives addressed in this EIS, and the impacts of these alternatives on local water quality (including surface water and groundwater).

Surface water flow data and water quality data were obtained from existing reports. Groundwater users, information on water use rights, and groundwater quality data also were obtained from existing reports.

B.3.2 Description of Impact Assessment

B.3.2.1 Water Use

The assessment of alternatives analyzed how the volume of current water usage and effluent discharges would change as a result of each alternative addressed in this EIS. Determination of the impacts of the alternatives on water usage and effluent discharge is summarized in **Table B–2**.

Table B–2 Impact Assessment Protocol for Water Use and Effluent Discharge

Resources	*Required Data*		*Measure of Impact*
	Affected Environment	*Alternative*	
Surface water availability	Surface waters near the facilities, including average flow and numbers of downstream users	Volumes of withdrawals from and discharges to surface waters	Changes in availability to downstream users of water for human consumption, irrigation, or animal feeding[a]
Groundwater availability	Groundwater near the facilities, including existing water rights for major water users, and contractual agreements for water supply use within impacted area	Volume of withdrawals from groundwater	Changes in availability of groundwater for human consumption, irrigation, or animal feeding

[a] For surface water availability, an impact is assumed if withdrawals exceed 10 percent of the 7-day, 10-year low-flow of the stream.

If the determination reflected an increase in water use or effluent discharge, then an evaluation of the design capacity of the water and effluent treatment facilities was made to determine whether the design capacity would be exceeded by the additional flow. If the combined flow (i.e., the existing flow plus that of the proposed activities) was less than the design capacity of the water and effluent treatment plants, then it was assumed that there would be no impact on water availability for local users, nor on the receiving stream from effluent discharges. Since flows from the facilities proposed to treat sodium-bonded spent nuclear fuel were found to not exceed the design capacity of the existing water or effluent treatment facilities, no additional analysis of water availability was performed.

B.3.2.2 Water Quality

The water quality impact assessment for this EIS analyzed how effluent discharges to surface water and groundwater resulting from the alternatives would affect current water quality. The determination of the impacts of the alternatives is summarized in **Table B–3**, and consisted of a comparison of the projected water quality with relevant regulatory standards such as the Clean Water Act, Safe Drinking Water Act, state regulations, and existing permit conditions. Separate analyses were conducted for surface water and groundwater impacts, as described below.

Table B–3 Impact Assessment Protocol for Water Quality

Resources	*Required Data*		*Measure of Impact*
	Affected Environment	*Alternative*	
Surface water quality	Surface waters near the facilities in terms of stream classifications and changes in water quality	Expected contaminants and contaminant concentrations in discharges to surface water	Compliance of discharges to surface water with relevant standards of Clean Water Act or with state regulations and existing National Pollutant Discharge Elimination System (NPDES) permits
Groundwater quality	Groundwater near the facilities in terms of classification, presence of designated sole–source aquifers, and changes in quality of groundwater	Expected contaminants and contaminant concentrations in discharges that could reach groundwater	Concentrations of contaminants in groundwater exceeding standards established in accordance with Safe Drinking Water Act or state regulations

Surface Water Quality

The evaluation of surface water quality impacts focused on the quality and quantity of effluent to be discharged and the quality of the receiving stream upstream and downstream from the discharge. The evaluation of effluent quality featured review of the expected parameters, such as the design average, as well as the effluent parameters reflected in the existing or expected NPDES permit. Those parameters include metals; organic and inorganic chemicals; radionuclides; and any other parameters that affect the local environment. Water quality management practices were reviewed to ensure that NPDES permit limitations would be met. Factors that currently degrade water quality were also identified.

Groundwater Quality

No effluent discharges to groundwater are anticipated from any of the alternatives. Therefore, an analysis of impacts to groundwater quality was not performed.

B.4 SOCIOECONOMICS

B.4.1 Description of Affected Resources

Socioeconomic impacts are defined in terms of changes to the demographic and economic characteristics of a region. The number of jobs created by treatment of sodium-bonded spent nuclear fuel could affect regional employment, income, and expenditures. Job creation is characterized by two types: construction jobs related to modification of existing facilities, which may be transient in nature and short in duration, and thus less likely to impact public services; and jobs related to plant operations that are required for a decade or more and, thus, possibly create additional service requirements in the region of influence.

The socioeconomic environment is made up of two geographic regions, the regional economic area and the region of influence. Regional economic areas are made up of regional economies and include industrial and service sector characteristics and their linkages to the communities within a region. These linkages determine the nature and magnitude of any effect associated with a change in regional economic activity. For example, as work expands within a region, the money spent on accomplishing this work flows into the local economy, where it is spent on additional jobs, goods, and services within the regional economic area.

Similarly, potential demographic impacts were assessed for the region of influence. The region of influence could represent a smaller geographic area—one in which only the housing market and local community services would be significantly affected by a given alternative. Site-specific regions of influence were

identified as those counties in which at least 90 percent of the site's work force reside. This distribution reflects an existing residential preference for people currently employed at the sites, and was used to estimate the distribution of new workers supporting the alternatives.

B.4.2 Description of Impact Assessment

The socioeconomic impact assessment analyzes both the potential positive and negative impacts of each alternative, including the No Action Alternative. For each regional economic area, data were compiled on the current socioeconomic conditions, including unemployment rates, economic industrial and service sector activities, and the civilian labor force. Work force and cost requirements of each alternative were determined to measure their possible effect on these socioeconomic conditions. For each region of influence, census statistics were compiled on population, housing demand, and community services. U.S. Census Bureau population forecasts for the regions of influence were combined with overall projected work force requirements for each of the alternatives being considered at each of the sites to determine the extent of impacts to housing demand and levels of community services (**Table B–4**).

Table B–4 Impact Assessment Protocol for Socioeconomics

Resources	*Required Data*		*Measure of Impact*
	Affected Environment	*Alternative*	
Regional Economic Characteristics			
Work force requirements	Site work force projections from DOE sites	Estimated construction and operating staff requirements and schedule	Work force requirements added to sites' work force projections
Regional economic area civilian labor force	Labor force projections based on state population projections		Work force requirements as a percentage of the civilian labor force
Unemployment rate	1996 unemployment rates in counties surrounding sites and in host states		Projected change in unemployment rates
Population and Housing			
Population	Latest available population projection estimates from the U.S. Census Bureau	Estimated contribution to projected population	Projected change in population projection
Housing (percent of occupied housing units)	Latest available rates from the U.S. Census Bureau	Assess potential need for housing units to meet work force requirements	Impacts are not expected since work force requirements are small
Community Services			
Education Percent operating capacity for school districts in region of influence	Latest available rates from the U.S. Census Bureau	Assess potential need for new schools	Impacts are not expected since work force requirements are small
Teacher-to-student ratio		Assess potential need for additional teachers	
Public safety Ratio of police and firefighters to 100,000 residents		Assess potential need for new officers	
Health care Number of hospital beds and physicians per 100,000 residents		Assess potential need for hospitals and physicians	

B.5 WASTE MANAGEMENT

B.5.1 Description of Affected Resources

The operation of support facilities for treating sodium-bonded spent nuclear fuel would generate several types of waste, depending on the alternative. Such wastes include the following:

- **High-level:** The highly radioactive waste material that results from the processing of spent nuclear fuel, including liquid waste produced directly in processing, and any solid waste derived from the liquid. High-level radioactive waste contains transuranic waste and fission products in combinations requiring permanent isolation.

- **Transuranic:** Waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste with half-lives greater than 20 years, except for: (1) high- level radioactive waste; (2) waste that DOE has determined, with the concurrence of the EPA, does not need the degree of isolation required by 40 CFR 191; and (3) waste that the U.S. Nuclear Regulatory Commission (NRC) has approved for disposal, case by case, in accordance with 10 CFR 61. Mixed transuranic waste contains hazardous components regulated under the Resource Conservation and Recovery Act (RCRA).

- **Low-level:** Waste that contains radioactivity and is not classified as high-level radioactive waste; transuranic waste; spent nuclear fuel; or the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level radioactive waste, provided the transuranic concentration is less than 100 nanocuries per gram of waste.

- **Mixed:** Low-level radioactive waste that also contains hazardous components regulated under RCRA.

- **Hazardous:** Under RCRA, a waste that, because of its characteristics, may (1) cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes appear on special EPA lists or possess at least one of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. This category does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act.

- **Nonhazardous:** Discarded material including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. This category does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act.

- **Other Wastes:** Miscellaneous waste streams such as fuel assembly hardware, metal and ceramic waste forms, and spent processing chemicals.

Wastes associated with the alternatives for treating the sodium-bonded spent nuclear fuel would be managed in existing or already-planned-for treatment, storage, and disposal facilities. The management could have an impact on existing site facilities. Wastes generated during modifications to existing facilities could produce additional hazardous debris.

Waste management activities in support of treatment of sodium-bonded spent nuclear fuel would be contingent on Records of Decision issued for the *Final Waste Management Programmatic Environmental Impact*

Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (DOE 1997a). Depending on future waste type-specific Records of Decision, in accordance with that EIS, wastes could be treated and disposed of on site or at regionally or centrally located waste management centers. According to the Transuranic Waste Record of Decision issued January 20, 1998, transuranic and transuranic mixed waste would be treated on site according to current planning-basis Waste Isolation Pilot Plant waste acceptance criteria and shipped to the Waste Isolation Pilot Plant for disposal. The impacts of disposing of transuranic waste at the Waste Isolation Pilot Plant are described in the *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* (DOE 1997b). Per the Hazardous Waste Record of Decision issued August 5, 1998, nonwastewater hazardous waste would continue to be treated and disposed of at offsite commercial facilities, with SRS continuing to treat some of its own hazardous waste on site in existing facilities, where this is economically favorable.

B.5.2 Description of Impact Assessment

As shown in **Table B–5**, impacts were assessed by comparing the projected waste stream volumes generated from the alternatives at each site with current site waste generation rates and storage volumes. For sodium-bonded spent nuclear fuel treatment, only the impacts related to the capacities of waste management facilities were considered. Environmental impacts of waste management facility operation are evaluated in other facility-specific or site-wide National Environmental Policy Act (NEPA) documents. Projected waste generation rates for the alternatives were compared with processing rates and capacities of those existing treatment, storage, and disposal facilities likely to be involved in managing the additional waste.

The waste generation rates associated with sodium-bonded spent nuclear fuel treatment were either provided by the sites' technical personnel or estimated based on evaluating similar processes, with adjustments made to account for differences in the amounts of materials processed.

Table B–5 Impact Assessment Protocol for Waste Management

Resources	*Required Data*		*Measure of Impact*
	Affected Environment	*Alternative*	
Waste management capacity related to: High-level radioactive waste Transuranic waste Low-level radioactive waste Mixed waste Hazardous waste Nonhazardous waste Other wastes	Site generation rates (cubic meters per year) for each waste type Site management capacities (cubic meters) or rates (cubic meters per year) for potentially affected treatment, storage, and disposal facilities for each waste type	Generation rates (cubic meters per year) of each waste type from modification and operation of existing facilities used to treat the sodium-bonded spent nuclear fuel	Combination of waste generation volumes from: (1) facilities that treat sodium-bonded spent nuclear fuel, and (2) current site and additional future generation volumes, in comparison to the capacities of applicable waste management facilities
Disposal capacity for transuranic waste (including mixed transuranic waste)[a]	Transuranic waste volume (cubic meters) expected to be disposed of at the Waste Isolation Pilot Plant Capacity at the Waste Isolation Pilot Plant (cubic meters)	Total transuranic waste generated (cubic meters) by spent nuclear fuel treatment facilities	Combination of transuranic waste generation volumes from: (1) facilities that treat sodium-bonded spent nuclear fuel, and (2) current site transuranic waste generation volume, in comparison to the capacity of the Waste Isolation Pilot Plant

[a] This additional entry is made for transuranic waste disposal because of its comparison with Waste Isolation Pilot Plant capacity.

B.6 CUMULATIVE IMPACTS

Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR 1508.7). The cumulative impact analysis for this EIS involved combining the impacts of the sodium-bonded spent nuclear fuel treatment alternatives (including No Action) with the impacts of other past, present, and reasonably foreseeable activities in a region of influence.

The regions of influence for different resources can vary widely in extent. For example, the region of influence for waste management would generally be confined to the site itself, whereas the region of influence for human health would include areas extending out to 80 kilometers (50 miles) from each site.

In general, cumulative impacts were calculated by adding the values for the baseline affected environment (i.e., conditions attributable to past and present actions by DOE and other public and private entities), the proposed action, and future actions. This cumulative value was then weighed against the appropriate impact indicators to determine the potential for impact. For this cumulative impact assessment, it was conservatively assumed that all facilities would operate concurrently at the DOE sites. Only selected indicators of cumulative impacts (**Table B–6**) were evaluated.

Table B–6 Selected Indicators of Cumulative Impacts

Category	*Indicator*
Resource use	Electricity use Water use Workers required
Air quality	Percent of NAAQS for criteria pollutants
Human health	Public • Offsite population • Maximally exposed individual dose • Total dose • Fatalities • Workers • Average dose • Total dose • Fatalities
Waste and spent nuclear fuel	Site waste generation rate versus capacity for: High-level radioactive waste Transuranic waste Low-level radioactive waste Mixed waste Hazardous waste Sanitary wastewater

The analysis focused on the potential for cumulative impacts at each candidate site from DOE actions under detailed consideration at the time of this EIS (**Table B–7**). Non-DOE actions were also considered where information was readily available. Public documents prepared by agencies of Federal, state, and local governments were the primary sources of information for non-DOE actions.

Table B–7 Other Past, Present, and Reasonably Foreseeable Actions Included in the Cumulative Impact Assessments

Activities	*INEEL*	*SRS*
Storage and disposition of weapons-usable fissile materials	X	X
Disposition of surplus highly enriched uranium		X
Interim management of nuclear materials at SRS		X
Management of waste at SRS		X
Supply and recycling of tritium		X
Management of waste	X	X
Management of spent nuclear fuel and INEEL environmental restoration and waste management	X	X
Management of foreign research reactor spent nuclear fuel	X	X
Shutdown of the river water system at SRS		X
Radioactive releases from the Vogtle Nuclear Power Plant		X
Management of plutonium residues and scrub alloy at Rocky Flats		X
Stewardship and management of the nuclear weapons stockpile		X
Accelerator production of tritium at SRS		X
Construction and operation of a tritium extraction facility at SRS		X

It was assumed that construction impacts related to internal modification of existing facilities would not be cumulative, because construction typically is short in duration and construction impacts generally are temporary. Decontamination and decommissioning of the facilities utilized for the treatment of sodium-bonded spent nuclear fuel was not addressed in the cumulative impact estimates. Given the uncertainty regarding the timing of decontamination and decommissioning, and the fact that facilities could be used for other projects, any impact estimate at this time would be premature. A detailed decontamination and decommissioning evaluation will be provided in follow-on NEPA documentation closer to the actual time of those actions.

Recent site-wide NEPA documents (**Table B–8**) provide the latest comprehensive evaluation of cumulative impacts for the sites.

Table B–8 Recent Comprehensive NEPA Documents for DOE Sites Assessed in This EIS

Site	*Document*	*Year*	*Record of Decision First Issued*
INEEL	DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final EIS (DOE 1995a)	1995	March 1996
SRS	SRS Waste Management Final EIS (DOE 1995b)	1995	October 1995

B.7 REFERENCES

ANL (Argonne National Laboratory), 1999, *Response to Data Call from SAIC for Sodium-Bonded Spent Nuclear Fuel Treatment Technologies*, Idaho National Engineering and Environmental Laboratory, Idaho Falls, June.

DOE (U.S. Department of Energy), 1995a, *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*, DOE/EIS-0203-F, Office of Environmental Management, Idaho Operations Office, Idaho Falls, Idaho, April.

DOE (U.S. Department of Energy), 1995b, *Savannah River Site Waste Management Final Environmental Impact Statement*, DOE/EIS-0217, Savannah River Operations Office, Aiken, South Carolina, July.

DOE (U.S. Department of Energy), 1997a, *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste*, DOE/EIS-0200-F, Office of Environmental Management, Washington, DC, May.

DOE (U.S. Department of Energy), 1997b, *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement*, DOE/EIS-0026-S-2, Carlsbad Area Office, Carlsbad, New Mexico, September.

DOE (U.S. Department of Energy), 1998, *Savannah River Site Spent Nuclear Fuel Management Draft Environmental Impact Statement*, DOE/EIS-0279D, Savannah River Operations Office, Aiken, South Carolina, December.

Moor, K. S., and H. K. Peterson, 1999, *INEEL Affected Environment: Supplemental Data Report in Support of the Preparation of the Plutonium-238 Production at ATR Environmental Impact Statement* (Predecisional Draft), INEL/EXT-99-Draft, Lockheed Martin Idaho Technologies Company, Idaho Falls, Idaho, February.